

REMARKS

In the Office Action of October 1, 2002, Claims 1 - 3 were rejected. No claim was allowed. In response, Claims 1 - 3 are amended. Reexamination and reconsideration are respectfully requested in view of the foregoing amendments and the following remarks.

Amendment to the Drawings

Corrected drawings are submitted by a separate Letter to the Official Draftsman. The corrected drawings contain corrections similar to those that were made in the parent application, Serial No. 09/493,104. In particular, in Figures 1 and 2, the "etching chamber 1" is designated as the "etching process unit 1". In Figure 1, the "unload lock chamber" is designated with reference numeral "4" instead of "7". In Figure 9, in S12, the reference number "41" is changed to "51"; in S13, the spelling of "etching" has been corrected; In D12, D13 and D14 a clear demarcation is given for the seed layer 44 consistent with what is shown in D 15 and D16 and layer 44 is clearly shown and labeled. Spelling errors are corrected in Figures 10 and 12. It is respectfully submitted that no new matter is introduced by these amendments.

Rejection of Claims 1 and 3 under 35 U.S.C. §102(b) over Komino

Claims 1 and 3 were rejected under 35 U.S.C. §102(b) as anticipated by Komino (U.S. Patent No. 5,769,952). The Examiner alleges that Komino teaches an apparatus for processing a specimen comprising an etching process unit which is supplied with a gas to produce a plasma, a rinsing unit and a dryer unit for drying the exposed surface. With respect to Claim 3, the Examiner alleges that Komino teaches that any number of the three processing chambers may be etching chambers. With respect to the

limitations in Claim 1 drawn to an intended method to be performed using the claimed apparatus, the Examiner states that that courts have ruled that a claim containing a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim.

This rejection is traversed as it may apply to Claims 1 and 3 as amended herein. In particular, independent Claim 1 is amended so to specify that the processing apparatus is dedicated for processing a specimen having a plurality of layers at least one of which includes NiFe or NiFeCo alloy which has the characteristic of not being able to withstand high temperature treatment above 200 °C. The etching process unit of the present invention therefore is designed to permit etching of the specimen under a low specimen temperature of below 200 °C by making use of a high density gas plasma with a low ion energy.

Further, the etching process unit, the rinsing unit and the dryer unit are arranged in a unitary apparatus to allow immediate successive treatments therebetween as, for example, explained on page 5, line 15 through page 8, line 13 of the specification and in particular, on page 7, line 26 through page 8, line 13.

It is respectfully submitted that these features are neither taught nor suggested by Komino.

Accordingly, it is respectfully submitted that the Claims 1 and 3 as amended are not anticipated by Komino.

Rejection of Claim 2 under 35 U.S.C. §103(a) over Komino in view of Kondo and Kameyama

Claim 2 was rejected under 35 U.S.C. §103(a) as obvious over by Komino in view of Kondo (U.S. Patent No. 5,303,671) and Kameyama (JP 60-183996). The Examiner alleges that in addition to what is described above, Komino discloses an atmospheric loader, a vacuum transport chamber having a vacuum transport robot, unload and loadlock chambers connecting between the atmospheric loader and the vacuum transport chamber for delivering the specimen, wherein the vacuum transport chamber is connected to the etching process chamber of the apparatus and the atmospheric loader is connected to the rinsing unit and drying unit. The Examiner acknowledges that Komino does not teach a rinsing cup in the rinsing unit and a hot plate in the drying unit. The Examiner alleges that Kondo teaches the use of a hot plate for the purpose of heating a specimen after washing. The Examiner takes the position that it would have been obvious to have provided a hot plate in the drying unit of Komino in order to heat a specimen after washing as taught by Komino. The Examiner further alleges that Kameyama teaches the use of a rinsing cup for the purpose of reducing the adhesion of dust, to use only a small amount of a treating liquid and to equalize the extent of a treatment. The Examiner alleges that it would have been obvious to have provided a rinsing cup in the rinsing unit of Komino in order to reduce the adhesion of dust, use only a small amount of treating liquid and equalize the extent of the treatment as taught by Kameyama.

This rejection is respectfully traversed as it may apply to Claim 2 as amended herein. As discussed above, independent Claim 1 is amended so to specify that the processing apparatus is dedicated for processing a specimen having a plurality of layers at least one of which includes NiFe or NiFeCo alloy which has the characteristic of not

being able to withstand high temperature treatment above 200 °C. The etching process unit of the present invention therefore is designed to permit etching of the specimen under a low specimen temperature of below 200 °C by making use of a high density gas plasma with a low ion energy.

Further, the etching process unit, the rinsing unit and the dryer unit are arranged in a unitary apparatus to allow immediate successive treatments therebetween as, for example, explained on page 5, line 15 through page 8, line 13 of the specification and in particular, on page 7, line 26 through page 8, line 13.

It is respectfully submitted that these features are neither taught nor suggested by Komino, Konga or Kameyama.

Accordingly, it is respectfully submitted that Claim 2 would not have been obvious over Komino, Kondo or Kameyama, alone or in combination.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 1 - 3 are in condition for allowance. Favorable reconsideration is respectfully requested.

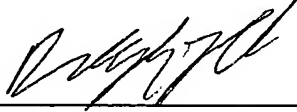
Should the Examiner believe that anything further is necessary to place this application in condition for allowance, the Examiner is requested to contact applicants' undersigned attorney at the telephone number listed below.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit
Account No. 01-2135 (503.38156VX1).

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By



Ralph T. Webb
Reg. No. 33,047

Attachment: Marked-Up Copy To Show Changes Made

RTW/dlt
Tel.: (703) 312-6600
Fax: (703) 312-6666

MARKED-UP COPY TO SHOW CHANGES MADE

IN THE CLAIMS

1. (amended) An apparatus for processing a specimen having two or more layers, at least one of which includes NiFe or NiFeCo alloy and which is laminated on a substrate, comprising:

an etching process unit, which is supplied with a gas ~~to produce a plasma, for that produces a high density gas plasma of a low ion energy with the gas and performs etching a~~ of the specimen laminated on a the substrate ~~having two or more layers, at least one of which comprises NiFe or NiFeCo alloy, with the produced high density plasma gas under~~ at a temperature of said the specimen below 200°C;

a rinsing unit ~~for which performs rinsing of~~ an exposed surface by the etching of said the lamination layer ~~comprising said~~ including the NiFe or NiFeCo alloy, which is exposed by said etching, using a liquid, immediately after the etching; and

~~a dryer unit for which performs drying said~~ of the rinsed exposed surface of said the lamination layer ~~comprising said~~ including the NiFe or NiFeCo alloy immediately after the rinsing thereof, wherein said etching process unit further performs in succession etching of the dried surface of the lamination layer comprising said including the NiFe or NiFeCo alloy which is dried is further subjected to with a high density gas plasma etching of a low ion energy under a temperature of the specimen below 200 °C.

2. (amended) An apparatus for processing a specimen according to claim 1, further comprising:

an atmospheric loader of the specimen laminated on the substrate;

a vacuum transport chamber unit having a vacuum transport robot therein; and

unload and load lock chambers connecting between said atmospheric loader and said vacuum transport chamber for delivering the specimen via an atmospheric transport unit, wherein

said vacuum transport chamber is connected to ~~said~~ an etching process chamber of said apparatus etching process unit, and

said atmospheric loader is connected via said atmospheric transport unit to at least a rinsing cup and hot plate provided in said rinsing/dryer units.

3. (amended) An apparatus for processing a specimen according to claim 4 2, wherein plural etching process chambers are provided in said etching processing unit.